Claims

1. An antagonist of ghrelin, wherein the antagonist is a nucleic acid, and whereby preferably the nucleic acid is binding to ghrelin.

2. An antagonist of the GHSR 1a receptor system, wherein the antagonist is a nucleic acid, and whereby preferably the nucleic acid is binding to the ligand of the receptor and whereby preferably the ligand is ghrelin.

3. The antagonist according to claim 1 or 2, wherein the nucleic acid comprises at least one L-nucleotide.

4. The antagonist according to any of claims 1 to 3, wherein the antagonist is an L-nucleic acid.

5. The antagonist according to any of claims 1 to 4, wherein the nucleic acid is a nucleic acid as defined in any of claims 6 to 14

6. A nucleic acid binding to ghrelin, preferably a L-nucleic acid binding to L-ghrelin.

7. The nucleic acid according to claim 6, wherein the L-nucleic acid is a nucleic acid as defined in any of claims 8 to 14

8. A nucleic acid having a sequence which is selected from the group comprising the sequences according to SEQ. ID. No. 7 to SEQ. ID. No. 125.

9. The nucleic acid according to claim 8, wherein the nucleic acid comprises at least one L-nucleotide.

10. The nucleic acid according to any of claims 8 to 9, wherein the nucleic acid is an L-nucleic acid.

11. The nucleic acid according to any of claims 8 to 10, wherein the nucleic acid is selected from the group comprising DNA, RNA and combinations thereof.

12. The nucleic acid according to any of claims 8 to 11, wherein the Kd of the nucleic acid is less than 1 μM, preferably less than 0.25 μM, more preferably less than 0.1 μM and most preferably less than 0.01 μM.

13. The nucleic acid according to any of claims 8 to 12, wherein the Kd of the nucleic acid is more than 100 nM, preferably more than 10 nM, more preferably more than 1 nM and most preferably more than 0.05 nM.

14. The nucleic acid according to any of claim 8 to 13, wherein the nucleic acid is of a length selected from the group comprising 15 to 150 nucleotides, 20 to 100 nucleotides, 20 to 80 nucleotides, 20 to 60 nucleotides, 20 to 50 nucleotides and 30 to 50 nucleotides.

15. Use of a nucleic acid according to any of claims 6 to 14 as an antagonist of ghrelin and/or the GHSR 1a receptor system.

16. A method for the generation and/or identification of a nucleic acid binding to a target molecule, preferably of a nucleic acid according to any of claims 6 to 14, comprising the following steps:

a) generating a heterogeneous population of nucleic acids;
b) contacting the population of step a) with the target molecule;
c) separating the nucleic acid(s) not interacting with the target molecule;
d) optionally separating the nucleic acid(s) interacting with the target molecule; and
e) optionally sequencing the nucleic acid(s) interacting with the target molecule,

characterized in that the target molecule is ghrelin.

17. The method according to claim 16, wherein subsequent to step c) a step ca) is carried out, whereby step ca) consists of amplification of the nucleic acid(s) interacting with the target molecule.

18. The method according to claim 16 or 17, wherein steps b) to d) are repeated.

19. The method according to any of claims 16 to 18, wherein the heterogeneous population of nucleic acids comprises at least one nucleic acid according to any of claims 6 to 14.

20. Method for the generation of an L-nucleic acid binding to a target molecule in the natural configuration comprising the following steps:

a) generating a heterogeneous population of D-nucleic acids;

b) contacting the population of step a) with an optical antipode of the target molecule;

c) separating the D-nucleic acid not interacting with the optical antipode of the target molecule;

d) sequencing the D-nucleic acid interacting with the optical antipode of the target molecule; and

e) synthesising the L-nucleic acid sequence(s) which is/are identical to the sequence of the D-nucleic acid(s) obtained in step d);

characterised in that the target molecule is L-ghrelin and the optical antipode of the target molecule is the D-ghrelin.

21. Method according to claim 20 characterised in that subsequent to step c) the following step is introduced:

ca) amplifying the D-nucleic acid interacting with the optical antipode of the target molecule.

22. Method according to any of claims 20 to 21, characterised in that steps b) to e) are repeated.

23. Method according to any of claims 20 to 22, characterised in that the heterogeneous population of nucleic acids comprises a nucleic acid according to any claims 6 to 14.

24. Use of a nucleic acid according to any claims 6 to 17 and/or of an antagonist according to any of claims 1 to 5 for the manufacture of a medicament.

25. Use according to claim 24 characterised in that medicament is for the treatment of a disease or disorder selected from the group comprising obesity, the regulation of energy balance, appetite and body weight, eating disorders, diabetes, glucose metabolism, tumour, blood pressure and cardiovascular diseases.

26. Composition comprising a nucleic acid according to any of claims 6 to 14 and/or an antagonist according to any of claims 1 to 5, and a pharmaceutical acceptable carrier.

27. Complex comprising ghrelin and any of the nucleic acids according to any of claims 6 to 14, preferably the complex is a crystalline complex.

28. Use of any of the nucleic acids according to any of claims 6 to 14 and/or of an antagonist according to any of claims 1 to 5 for the detection of ghrelin.

29. Method for the screening of a ghrelin antagonist comprising the following steps:

- providing a candidate ghrelin antagonist,
- providing a nucleic acid according to any of claims 6 to 14 and/or an antagonist according to any of claims 1 to 5,
- providing a test system providing a signal in the presence of a ghrelin antagonist, and
- determining whether the candidate ghrelin antagonist is a ghrelin antagonist.

30. Kit for the detection of ghrelin, comprising a nucleic acid according to any of claims 6 to 14 and/or an antagonist according to any of claims 1 to 5.